

Translation

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

PCT Application  
PCT/JP2003/002288



Applicant's or agent's file reference 562087	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/JP2003/002288	International filing date (day/month/year) 28 February 2003 (28.02.2003)	Priority date (day/month/year) 04 March 2002 (04.03.2002)
International Patent Classification (IPC) or national classification and IPC C07D 303/04, 301/12, B01J 29/89		
Applicant SUMITOMO CHEMICAL COMPANY, LIMITED		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.  
☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  
These annexes consist of a total of \_\_\_\_\_ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☒ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 04 July 2003 (04.07.2003)	Date of completion of this report 14 January 2004 (14.01.2004)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP2003/002288

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

☒ the international application as originally filed☐ the description:

pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

☐ the claims:

pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, as amended (together with any statement under Article 19  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

☐ the drawings:

pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

☐ the sequence listing part of the description:

pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under item 1.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).☐ the language of publication of the international application (under Rule 48.3(b)).☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.☐ filed together with the international application in computer readable form.☐ furnished subsequently to this Authority in written form.☐ furnished subsequently to this Authority in computer readable form.☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.4. ☐ The amendments have resulted in the cancellation of:☐ the description, pages \_\_\_\_\_☐ the claims, Nos. \_\_\_\_\_☐ the drawings, sheets/fig \_\_\_\_\_5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

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## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims	1-4	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-4	NO
Industrial applicability (IA)	Claims	1-4	YES
	Claims		NO

### 2. Citations and explanations

The following documents are cited in the international search report.

Document 1: US 6114551 A

Document 2: US 6106797 A

Document 3: Chemistry Letters, 2000, No. 7, pp. 774-775

Document 4: Chemical Communications (Cambridge, UK),  
2001, No. 10, pp. 897-898

In addition, the following document cited in the present international application is also cited as a prior art document in this international preliminary examination report.

Document 5: Tomo Kure & Takashi Satsumi, "Postsynthesis kouzou tenkahou ni yoru kouseinou Ti-MWW shokubai no chousei", Shokubai, 2000, pp. 468-470

Documents 1-5 all relate to epoxidation of olefins by means of hydrogen peroxide. In connection with epoxidation of propylene by hydrogen peroxide, documents 1 and 2 mention performing the reaction in the presence of a catalyst.

However, Documents 1-5 do not disclose a process for producing propylene oxide by epoxidation in the presence of a crystalline titanosilicate having an MWW structure due to incorporation of titanium during crystallization. Therefore, the process for producing propylene oxide described in claims 1-4 is novel as stipulated in PCT Article 33(2).

However, documents 3-5 disclose epoxidation of olefins in the presence of an MWW titanosilicate, and documents 3 and 4 in particular disclose the use of acetonitrile as the reaction solvent. Therefore, investigation of conditions using this catalyst and organic solvent for the epoxidation of propylene by hydrogen peroxide, which like the processes disclosed in these documents is the epoxidation of an olefin by means of hydrogen peroxide, is obvious to a person skilled in the art familiar with the aforementioned documents. Document 2 also mentions prior art regarding generation of hydrogen peroxide in the system when producing propylene oxide from propylene, so that this feature is also obvious to a person skilled in the art.

Therefore, the process for producing propylene oxide described in claims 1-4 does not involve an inventive step as stipulated in PCT Article 33(3).

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## VI. Certain documents cited

### 1. Certain published documents (Rule 70.10)

Application No. Patent No.	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
EX JP 2002-102709 A	09 April 2002 (09.04.2002)	29 September 2000 (29.09.2000)	

### 2. Non-written disclosures (Rule 70.9)

Kind of non-written disclosure	Date of non-written disclosure (day/month/year)	Date of written disclosure referring to non-written disclosure (day/month/year)